Amendments to the Claims:

The following listing of claims replaces all prior versions and listings of the claims in this application.

Listing of the Claims:

1.   (Currently Amended and Withdrawn)   A method of determining the influence on microcirculation in living tissue from drugs, disease, injuries or normal regulation, employing the system of claim 12, including: (i) illuminating a tissue surface with polarized light from the light source and filter; (ii) collecting backscattered light through the polarizing filter; (iii) detecting the backscattered and polarized light by the photosensitive array and converting the detected light to a collected information of digital values; (iv) transferring the collected information in digital form to the computing device; (v) separating the collected information into data matrixes representing red, blue and green colors, respectively; (vi) generating an output data matrix by processing corresponding values in the data matrixes by an algorithm, wherein each value in said output data matrix represents the amount of influence on the microcirculation in a source point of the tissue, thereby obtaining a representation of the red blood cell concentration of the tissue microcirculation.

2.   (Withdrawn)   A method according to claim 1 including subjecting said tissue to local administration of a vasoactive agent.

3.   (Withdrawn)   A method according to claim 2, wherein iontophoresis is employed to support the administration of said vasoactive agent.

4.   (Withdrawn) A method according to claim 2, wherein said vasoactive agent is a

vasodilator selected from the group consisting of acetylcholine and sodium nitrousprusside.

5. – 11. (Cancelled).

12.   (Currently Amended) A system for determining microcirculation of a living tissue

comprising: (i) a white light source and a filter capable of illuminating a tissue surface with

polarized light, (ii) a polarizing filter for collecting backscattered light; (iii) a photosensitive

array capable of detecting the backscattered and polarized light and converting the detected light

to a collected information of digital values; and (iv) a computing device receiving said collected

information and adapted to separate it into data matrixes representing red, blue and green colors,

respectively, and to employ ~~employing~~ an algorithm to the data matrixes to generate an output

data matrix representing the red blood cell concentration of the microcirculation.

13.   (Currently Amended) A system according to claim 12 comprising means for presenting

said output data matrix as an image of vasodilatation or vasoconstriction, colored or shaded in

accordance with a scale of vasodilatation or vasoconstriction ~~vasodilatation~~.

14.   (Previously Presented) A system according to claim 12, wherein said polarizing filter

provides a polarization direction orthogonal to that of polarized light from the light source and

filter.

15.   (Previously Presented)   A system according to claim 12, wherein said polarizing filter provides a polarization direction parallel to that of polarized light from the light source and filter.

16.   (Original) A system according to claim 12, comprising a reference area for producing a measurement value for normalization of the values of the said data matrixes.

17.   (Previously Presented)   A system according to claim 12, wherein said algorithm for generating the output data matrix employs the difference of the values of the data matrixes representing red and green colors divided by the sum of the corresponding values of the data matrixes representing red and green colors.

18.   (Original)   A system according to claim 12, wherein said computing device comprises an algorithm for generating compensation for tissue color using the values in the data matrixes.

19.   (Previously Presented)   A system according to claim 12, comprising flexible optical fibers capable of directing polarized light from the light source and filter to a body cavity and to direct backscattered light to the photosensitive array.

20.   (Original)   A system according to claim 12 adapted to cooperate with a mobile communication terminal capable of transmitting the output data matrix over a telecommunication network.

21.   (Original)   A system according to claim 20 integrated with a mobile communication terminal.

22.   (Original)   A system according to claim 20 having a separate mobile communication terminal connected to said system with communication links.

23 .   (Currently Amended and Withdrawn)   A method of determining if a patient suffers from abnormalities in microcirculation, employing the system of claim 12, comprising: (i) illuminating a tissue surface with polarized light from the light source and filter; (ii) collecting backscattered light through the polarizing filter; (iii) detecting the backscattered and polarized light by the photosensitive array and converting the detected light to a collected information of digital values; (iv) transferring the collected information in digital form to the computing device; (v) separating the collected information into data matrixes representing red, blue and green colors, respectively; (vi) generating an output data matrix by processing corresponding values in the data matrixes by an algorithm, wherein each value in said output data matrix represents the amount of influence on the microcirculation in a source of point of the tissue, thereby obtaining a representation of the red blood cell concentration of the tissue microcirculation; (vii) comparing the output matrix data or its representation with a reference obtained from a healthy individual, or from the same patient prior to the administration of a vasoactive composition.

24.   (Withdrawn) A method according to claim 23, wherein said abnormalities are representations of blood pressure drop, vascular shock or the presence of vascularized tumors.

25.   (Withdrawn) A method according to claim 23, wherein said abnormalities represent complications of impaired microcirculation arriving from diabetes or Alzheimer's disease, comprising a first step of subjecting the patient to local administration of a vasoactive composition.

26.   (Withdrawn) A method according to claim 25, wherein the vasoactive composition comprises at least one vasodilatating agent.

27.   (Withdrawn) A method according to claim 25, wherein the vasoactive composition comprises a first agent exerting its vasodilatating activity by the smooth muscles and a second agent that exerts its vasodilatation activity by the endothelium.

28.   (Withdrawn) A method according to claim 25, wherein the vasodilatating agents are selected from the group consisting of acetylcholine and sodium nitroprusside.

29.   (Withdrawn) A method according to claim 25, wherein the local administration of vasoactive composition is supported with iontophoresis.

30. - 35. (Cancelled).

36. (Currently Amended)   A system according to claim 12, wherein said algorithm for generating the output data matrix employs the difference of the values of the data matrixes representing red and green colors divided by corresponding values of the data matrix ~~matrixes~~ representing blue color.

37. (Previously Presented)   A system according to claim 12, wherein said algorithm for generating the output data matrix employs the difference of the values of the data matrixes representing red and green colors divided by corresponding values of data matrixes representing the difference between red and blue colors.

38. (Currently Amended)   A system according to claim 12, wherein said algorithm for generating the output data matrix employs the difference of the values of the data matrixes representing red and blue colors divided by corresponding values of the data matrix ~~matrixes~~ representing green color ~~colors~~.